The Veterinary Record, August 13th, 1960 Price 2s.

RECEIVED
SEP 22
VET. MED. LIBRARY
VET. MED.

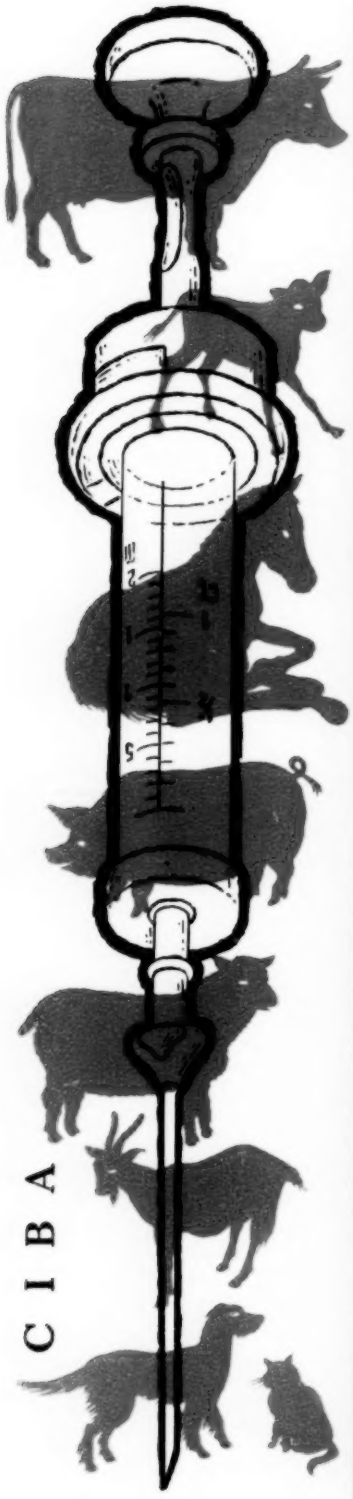
THE JOURNAL OF THE BRITISH VETERINARY ASSOCIATION

The Veterinary Record

PATRON: HER MAJESTY THE QUEEN

OHIO STATE UNIVERSITY
SEP 19 1960

Vol. 72 No. 33 Issue No. 4290 653-674 Registered as a Newspaper



STOP PRESS

VETIDREX tablets for SMALL ANIMALS and maintenance therapy in large animals

The first potent injectable diuretic for cattle

Vetidrex

(hydrochlorothiazide)

for all oedemas

10 ml. vials 50 mg./ml. bases of 1 and 5.

Vecortenol

(prednisolone trimethylacetate)

The longest-acting corticosteroid for depot therapy

4 ml. and 10 ml. vials 25 mg./ml.

Both products of CIBA research

'Vetidrex' and 'Vecortenol' are registered trade marks

CIBA Laboratories Limited, Horsham, Sussex

19/60

THE VETERINARY RECORD

Founded by William Hunting, F.R.C.V.S., in 1888

Volume 72
No. 33

SATURDAY, AUGUST 13th, 1960

7 Mansfield Street,
London, W.1.
Museum 6541

Refresher Article No. 18

Diseases of the Canine Eye

BY

F. G. STARTUP
Worthing

SUMMARY.—The common diseases affecting the eye of the dog are described, and the recent advances in canine ophthalmology are reviewed. Surgical procedures are briefly described, but detailed surgical technique is not within the scope of this paper.

Part I

Examination of the Eye

EXAMINATION of the eye and its adnexa in the canine patient is usually possible with a minimum of restraint, but, in certain cases, local or even general anaesthesia may have to be employed.

The examination is best carried out in a darkened room, and certain equipment is essential for adequate examination and accurate diagnosis. Some form of electric lamp must be available, and the clinician will also need an electric ophthalmoscope, a corneal magnifying lens and a condensing lens of about 14 diopters.

Drugs employed during the examination will include a 2 per cent. solution of fluorescein, to demonstrate corneal injuries that might otherwise be not discernible, and also to test the patency of the lacrimal canals ; a 2 per cent. solution of homatropine, to produce dilatation of the pupil in certain cases ; and a local anaesthetic, preferably 4 per cent. lignocaine hydrochloride. It should be noted that cocaine is liable to injure the corneal epithelium, and should be used with care.

The normal procedure is first to make a detailed examination of the adnexa, and then to examine the ocular structures serially, commencing with the cornea and ending with the fundus (Formston, 1956).

External Examination

A general inspection is made for obvious abnormalities. The lids are examined for evidence of injury, blepharitis, entropion, ectropion, and tumours, and the lids are everted to allow an examination of the conjunctiva and nictitating membrane. The size, shape, internal pressure and movements of the eyeballs are noted. Finally, a preliminary naked-eye examination is made of the anterior segment—cornea, anterior chamber, iris and lens.

Oblique Illumination

For this procedure, a source of light is concentrated on to the anterior structures of the eye by means of a convex lens, and the illuminated spot is viewed through a magnifying lens.

The cornea should also be examined from the lateral view, or conditions such as imbedded foreign bodies and anterior synechia may be missed.

Ophthalmoscopic Examination

An ophthalmoscope is necessary for the examination of the posterior segment, and may also be used for viewing the anterior structures. Bunce (1955), Beamer (1959) and other authors have described the use of the ophthalmoscope in canine ophthalmology.

The ophthalmoscope is an instrument that reflects light into the eye from an angulated mirror. Behind the mirror are a series of spherical lenses, in a circular revolving disc, through which the viewer can examine the patient's eye. The lenses vary from −0·5 D. to −20 D. on one side of the disc, and from +0·5 D. to +20 D. on the other.

A diopter (D.) is the degree of magnification which will bring into focus an object observed at a distance of 1 metre. Thus, a lens of 1 D. has a focal length of 1 metre, and a lens of 2 D. has a focal length of 0·5 metre. The observer's vision, unless emmetropic, should be corrected by spectacles so that the aperture

marked O gives a clear view of the fundus, provided the patient is also emmetropic.

Use of the Ophthalmoscope. Indirect ophthalmoscopy is not usually suitable for canine work, and the direct method should be used. The ophthalmoscope is held close to the observer's eye and, in the first instance, approximately 10 in. from that of the patient. This will give a general view of the refractive media. It is important that the observer relaxes his own accommodation and gazes *through* the eye and not *at* the eye.

For detailed examination of the fundus, the instrument should be brought as close as possible to the patient, thus giving the maximum magnification. Most dogs are myopic, and a −3 D. lens is used to focus on the disc. The fundus, consisting of optic disc, tapetum lucidum, tapetum nigrum and retina can be examined, but only a small portion of the fundus is generally visible ; it is difficult to view the periphery in the conscious animal. The normal fundus of the dog has been described by Parry (1953a), Bunce (1955) and other authors.

By changing the lens in the ophthalmoscope, the fundus can be brought into clear view. Then by rotating the lenses, through the minus range to the plus range, the structures anterior to the fundus can be viewed. Vitreous opacities are seen between 0 and +8 D., the lens between +8 and +12 D., and the iris, anterior chamber and cornea at about +20 D.

Familiarity with the normal structure of the eye, in which there are many variations in the dog, is essential for accurate diagnosis.

Other Examinations

The eyes should be tested for the presence or absence of the palpebral reflex, and the pupillary reflex should also be noted. Tests of visual acuity are not easily applied to the dog, for this animal learns to adapt itself very well to failing sight, and relies greatly on hearing and the sense of smell.

The Eyelids

Congenital Abnormalities

1. Ankyloblepharon, a condition in which the eyelids are fused together is, of course, normal for the first 10 to 15 days of a pup's life. Occasionally, cases are seen in which the eyelids fail to open, and in some cases, surgical intervention may become necessary. Cases also occur in which acute infection develops within the closed or partly closed eyelids. This necessitates forcible opening and antibiotic treatment, but will often result in permanent damage to the cornea.

2. Symblepharon, or adhesion of the lid, in part or *in toto*, to the eyeball.

3. Coloboma, or a notch in the margin of an eyelid, is rare, but may be complicated by epiphora and will require plastic surgery.

4. Blepharophymosis, or narrowing of the palpebral opening, may be seen occasionally, especially in the Chow.

5. Epicanthus, a fold of skin connecting the upper and lower lids, covering the nasal canthus, may be treated by simple excision or multiple ligation.

6. Ptosis, trichiasis, distichiasis, entropion, ectropion and atresia of the lacrimal puncta may also be congenital and are dealt with later.

Wounds of the Eyelids

These are common in the dog as the result of accidents and fights, and may be accompanied by excessive lacrimation and, sometimes, epiphora, or overflow of tears. Even trivial injuries may produce severe oedema or ecchymosis.

Wounds may be at right angles to the lid or longitudinal and, in many cases, are complicated by loss of part of the lid. Wounds at the nasal canthus may cause damage to the lacrimal puncta or canal, and the subsequent healing may result in occlusion or malposition of the puncta. Other cases, on healing, may result in either entropion or ectropion.

Treatment. This will, of course, vary with the position and nature of the damage, but simple wounds, parallel to the lid edge, may be sutured with fine nylon. It is important that these sutures pass only through the skin edge, and penetration of the tarsal cartilage and puckering of the wound must be avoided.

Wounds involving loss of lid substance are best sutured without trying to replace the missing tissue, except in those cases that are very full in the lid. At a later date irregularities can be remedied by plastic surgery.

Subsequent wound infection should be treated by antibiotic therapy and local anaesthetic ointments can be used to prevent interference by the patient.

The commonest sequel to wounds of the eyelids is a V-shaped notch through which tears will overflow. in some cases, there is sufficient lid to spare to allow, suturing, after preparing fresh edges. In other cases, the wound may be sutured by relieving tension, either by means of a counter-incision at the side of the V, allowed to heal as an open wound, or by performing a canthotomy.

Burns and scalds involving the eyelids are not common in the dog, but occasionally lime or disinfectants are the cause of considerable damage or sloughing. Treatment in these cases must be on radical lines.

Foreign Bodies

In the dog, the awn of wild barley is commonly lodged beneath the third eyelid. Most cases will exhibit lacrimation in the early stages, and, if not treated, will subsequently develop blepharospasm and conjunctivitis.

Treatment in these cases depends on removal of the foreign body under local or general anaesthesia, after inverting the third eyelid, care being taken not to damage the Harderian gland.

Oedema of the Eyelids

This may be caused by trauma, conjunctivitis, infection or allergy, particularly to pollens, stinging insects and toads.

Treatment will depend on the removal of the cause, and treatment with antibiotics or antihistaminics.

Blepharitis

Inflammation of the margins of the eyelids may be associated with specific diseases, dietary deficiencies or local infections, particularly staphylococcal infections. It may occur in a non-ulcerative form, in which the lids are swollen and reddened, or in an ulcerative form, where the accumulation of pus forms yellow crusts which tend to make the eyelids adhere to one another.

Treatment consists of the removal of the exciting factor where possible, repeated cleansing, antibiotic therapy and the cauterisation of ulcers with silver nitrate.

Blepharospasm

Tight closure of the eyelids, due to spasm of the orbicularis muscle, may result from foreign bodies, entropion, keratitis or acute conjunctivitis. The condition itself may produce a keratitis, sometimes ulcerative, due to the mechanical rubbing of the edge of the lid against the cornea.

Treatment will consist of the removal of the cause and the relief of spasm by the use of anaesthetic preparations. A spastic entropion should be treated urgently to avoid corneal damage, and, if not relieved quickly by simple treatment, it may be corrected by the injection of warm sterile liquid paraffin under the skin of the eyelid, to evert it, or by the insertion of sutures without the removal of any skin.

Ptosis

Drooping of the lid may be congenital, or associated with neoplasia of the lid, or with cerebral tumours, or traumatic in origin, due to paralysis of the levator muscle resulting from damage to the third cranial nerve. Ptosis may also result from damage to the orbicular branch of the 7th cranial nerve following trauma or aural resection operations.

Some cases of ptosis will recover spontaneously, but permanent cases will require plastic operations.

Lagophthalmos

Inability to close the eyelids will result in excessive drying of the cornea, leading to keratitis sicca and corneal ulceration.

This condition may be due to injury to the 7th cranial nerve, and subsequent paralysis of the orbicularis muscle. Other causes may be prolapse of the Harderian gland, tumours of the lids or of the orbit, exophthalmos, corneal injuries or lacrimal gland infections.

Treatment must be aimed at the removal of the cause when possible and, in cases where the remedy cannot be applied immediately, the cornea must be kept moist by constant bathing and the application of either liquid paraffin or artificial tears. In some cases, it will be found beneficial to suture the lids together and, when this is done, it is best to use a Lembert suture applied over a gauze pad.

Closure of the Palpebral Fissure

This may take the form of a congenital blepharophymosis, or the closure may be traumatic in origin, resulting from cicatricial contraction of an eyelid wound.

In those cases in which the eyeball is normal underneath, a canthotomy may be performed, incising the skin at the temporal canthus in a lateral direction, severing the underlying conjunctiva and repairing the wound by suturing conjunctiva to skin, thus enlarging the palpebral opening.

Neoplasia of the Eyelids

Papillomata are common, and may be melanotic. Treatment is by simple excision or cautery.

Epitheliomata occur in older animals, and may involve the membrana nictitans. Excision is possible in some cases, but enucleation of the eye may be necessary.

Angiomata, basal-cell carcinomata and sarcomata have been recorded, but are uncommon.

The use of beta-ray therapy in the treatment of tumours of the eyelids is discussed by Beamer (1959c), and an indication of the dosage to be employed is given.

Chalazion

A chalazion (or Meibomian or tarsal cyst) may be found in either lid, usually the upper, and appears as a small, globular, hard swelling beneath the skin of the lid. It will usually be situated about 3 mm. from the lid margin, well separated from the line of the lashes. On eversion of the eyelid, a red discoloration, sometimes with a yellow centre, is seen on the surface of the conjunctiva.

The swelling is due to an accumulation of lymphoid tissue within one of the Meibomian glands, as a result of chronic inflammation following obstruction of the duct of the gland.

Treatment is surgical and consists of making a vertical incision over the centre of the conjunctival aspect of the swelling, and the removal of the whole of the contents with a curette.

Hordeolum

A hordeolum, or stye, is an abscess which starts in the sebaceous gland of a lash follicle. It is painful, and appears as a localised, reddened swelling at the lid margin, in the line of the lashes. A yellow spot appears in a day or two, in the centre of the swelling, and, from this, a lash is usually seen to project. Oedema of the lid is sometimes present, and there is usually lacrimation and, sometimes, blepharospasm.

Treatment consists of hot compresses, incision of the abscess and antibiotic ointments. In cases of repeated recurrence, the use of staphylococcus toxoid or an autogenous vaccine may be considered.

Abscess formation in the Meibomian gland is uncommon, and, apart from the inflammatory signs, will be similar to a chalazion.

Cysts of the Eyelid

Although uncommon, a cyst may sometimes be found in one of the sweat glands, or glands of Moll, in the line of the lashes. A dermoid cyst occasionally occurs in the upper lid, and may be removed surgically.

Peri-orbital Dermatitis

Skin lesions around the eyes may occur as an extension of specific skin diseases affecting the face,

XUM

such as demodectic mange or furunculosis. Other cases may be secondary to a conjunctivitis or other eye disease, and may be largely self-inflicted.

A " tear streak " may be found in cases of epiphora due either to co-existing ophthalmic disease, disorders of the lacrimal system or disease of the Harderian gland.

Treatment will depend on the removal of the basic cause, and the prevention of further self-damage, together with the use of suitable ointments.

Trichiasis and Distichiasis

In the condition of trichiasis, the eyelashes are situated in their normal position at the edge of the lid, but are wrongly angulated so that they impinge on either the conjunctiva or the cornea.

Trichiasis, which is most commonly seen in the Pekingese and Collie, may be congenital in origin, or may be associated with either entropion or blepharospasm.

Distichiasis signifies a double row of lashes, either partial or complete, one of which is situated in the normal position, the other turning towards the eye and again impinging on the cornea.

Both these conditions may produce excess lacrimation and irritation, and may lead to either a conjunctivitis or a keratitis.

Treatment can be undertaken in the form of a radical operation, incising along the edge of the lid, on either side of the Meibomian orifices and removing the area containing the offending lashes. Alternately, epilation may be carried out by electrolysis with a weak galvanic current applied through a fine needle introduced into the hair follicle. In other cases, an entropion operation can be used to alleviate the condition. Mild cases can be treated by repeated forceps epilation.

Entropion

Entropion is the inversion or rolling inwards of the lid margin, and the irritation produced either by the edge of the lid, the hair of the lid or the eyelashes will lead to a conjunctivo-keratitis.

Congenital entropion is seen most commonly in the Chow, Bullmastiff, Pekingese and Pomeranian. It is also seen in the Cocker Spaniel, often associated with an ectropion in another part of the same lid. In the Chow it is usually associated with a small palpebral opening and a shortened lid. In the Bullmastiff it may be associated with excessive folds of loose skin over the head. It is usually bilateral, may affect both upper and lower lids, and will often affect the various lids to a different degree.

Acquired entropion may be associated with the cicatricial contraction of wounds of the eyelids, or with cicatricial contraction of the palpebral conjunctiva or subconjunctival tissues in cases of chronic conjunctivitis. Spastic entropion is seen in cases of blepharospasm and will usually affect the lower lid only. Other cases will occur where there is atrophy of the eyeball, or whenever there is marked sinking of the eyeball due to absorption of the retrobulbar fat.

The symptoms exhibited will vary according to the degree of the entropion, but will be accompanied by lacrimation and possibly irritation. Severe cases will cause blepharospasm which will, in turn, produce entropion of a greater degree, and may lead to conjunctivitis, keratitis and corneal ulceration. The position of the lacrimal puncta may be upset, leading to a marked epiphora.

Treatment is based on the surgical eversion of the lid. The orthodox operation consists of the removal of an elliptical portion of skin and orbicularis muscle, parallel to the lid, and of such a size as to correct the deformity when the wound is sutured and the lid drawn outwards into its normal position. The subsequent healing of the wound, and cicatricial contraction, will then keep the lid in its normal position. It is important, in this operation, that fine sutures are used, and that they are not drawn too tight. Critical judgment of the site and area to be removed is most important for good results, bearing in mind the possible subsequent show career of the animal.

In the Chow, the orthodox operation may result in a round shape of the palpebral orifice and Smythe (1958) suggests a canthoplasty combined with a moderate skin incision and lengthening of the fissure by slitting at the temporal canthus.

The same author also advises the use of topical anaesthesia for several days before the operation, in order to eliminate blepharospasm, and thus enable a finer judgment to be made of the extent of incision necessary. He also recommends the use of trephine incisions, removing circular areas of skin below the parts of the lid which need withdrawal, together with a little of the orbicularis muscle. These trephine circles, which should approximate the lower edge of the lid, are sutured horizontally. The lower lid only is treated in this way, the upper lid being corrected by snipping out small portions with scissors. In the Chow, he recommends a canthotomy, combined with one or two small trephine holes, one at the centre of the lid and one at the canthus.

Dixon (1948) suggests the use of advancement flaps, the idea being to split the lid to allow the skin to be moved at will to any new position that the case may require.

An incision is made in the eyelid farther away from the margin than in the classical operation, and a narrow strip of skin is removed. The skin between the wound and the margin of the lid is then undermined, leaving a narrow strip on the margin of the lid intact to ensure the blood supply, and leaving the fat attached to the skin and raised with the flap. The skin of the lid now slides over the underlying structures to its new position, the extreme edge of the lid rolling outwards. This method gives more accurate correction and avoids stretching and puckering.

Using this technique, it is possible to make a single incision, undermining the wound, and drawing the skin away until the lid is in the correct position. The excess skin is then trimmed away, and the flap is fitted accurately into its new site. Any tension resulting at the outer canthus can be relieved by making a V incision, with the point away from the eye, undermining and suturing the wound as a Y.

In cases where there is an entropion at the inner canthus, and ectropion in the centre of the lid, a rotation flap is used. In this case, a curved incision

is made, as a sharp curve below the entropion and straight below the ectropion, the skin is undermined, and a small triangular piece of skin is removed at either end of the wound. Suturing is started at the inner canthus, where the apex of the triangle is drawn down to the long outer curve. The flap is then rotated outwards until the remaining side of the triangle can be fixed to the outer curve. The edge of the flap is now stretched to the outer curve, so that the fitting of a wide flap into a narrow opening will correct the entropion and the ectropion at the same time.

Ectropion

Ectropion is the reverse of entropion, and is the eversion of the lid with exposure of the conjunctival surface. It will, of course, affect the lower lid only.

This condition may be congenital in the case of such breeds as the Spaniels, Hounds and Mastiffs, where it is associated with excess skin of the lids and excessive length of the palpebral fissure. Acquired cases may be due to the faulty healing of lid wounds or subsequent cicatricial healing.

Various operations have been devised for the correction of ectropion, the classical method being to remove a part of the entire thickness of the lid, or removing a length of the rim of the lid at the temporal canthus and suturing the remainder to the palpebral angle.

Many cases can be successfully corrected by removing a portion of the conjunctiva lining the eyelid at the site of the ectropion, and allowing the subsequent cicatricial contraction to pull in the lid.

Smythe suggests the use of trephine holes below the centre of the eyelid, sutured perpendicularly instead of horizontally as in the case of entropion. An alternative method is to make a V incision in the lower lid, with the point downwards, and to suture this wound as a Y, combining this technique, if necessary, with a canthotomy.

The Membrana Nictitans

The third eyelid is frequently torn or lacerated in accidents and fights, and injured areas may need amputation. It is also involved in conjunctivitis, particularly of the follicular type ; and with foreign bodies travelling between the membrane and the cornea.

Excessive prominence of the third eyelid will be seen in debilitating disease, due to the absorption of the retrobulbar fat and subsequent sinking of the eyeball. Congenital prominence is seen in such breeds as the Boston Terrier and Boxer, and the membrane may be trimmed to improve appearance ; total removal may lead to chronic conjunctivitis, due to destruction of conjunctiva and the formation of a sac.

Hypertrophy of the membrana nictitans may follow conjunctivitis, and may affect one or both eyes. It is seen particularly in the Labrador and the Great Dane, and may cause considerable discomfort and necessitate the removal of the eyelid.

Tumours of the third eyelid, such as epitheliomata, endotheliomata, carcinomata and sarcomata have been recorded.

Prolapse of the Harderian gland occurs particularly in the Bulldog and Bull Terrier. The prolapse is caused by swelling and hypertrophy of the gland or adenitis, the gland becoming oedematous and projecting beyond the edge of the third eyelid as a round, red mass. Treatment is by excision of the gland or, in some cases, removal of the eyelid, controlling the often considerable haemorrhage by the use of adrenaline.

Inflammation of the harderian gland is reported as a cause of chronic lacrimation in the dog (Hodgman, 1957), particularly in breeds with prominent eyes. In these cases, the under surface of the membrane is granulated, and cauterisation with a saturated solution of carbolic acid, under local anaesthesia, protecting the eye with a suitable ointment, is followed by 100 per cent. recovery within 14 days.

The Lacrimal Apparatus

Occlusion of the Lacrimal Canal

Congenital atresia of the lacrimal puncta is seen particularly in the Miniature Poodle, Sealyham and Bedlington Terrier, and will be associated with a permanent " tear streak." Occlusion can also occur as the result of damage to the puncta by trauma, and in cases of congenital or acquired entropion. Blockage of the canal can take place through catarrhal thickening of the lining membrane, and this condition is likely to become chronic. A senile type, seen particularly in the Cocker Spaniel and Pekingese, may be due to relaxation of the lower lid.

All cases of lacrimal canal occlusion will be accompanied by some degree of epiphora, or overflow of tears. The patency of the lacrimal canal is best tested by the use of fluorescein.

Cases of lacrimal canal blockage can be cleared by passing a fine strand of nylon through the puncta and down the canal, or the canal may be irrigated by the use of lacrimal needle. Where necessary, the puncta may be enlarged with a canaliculus dilator, or by opening the canal with a knife in an upward and outward direction ; such openings will usually remain patent.

Dacryoadenitis

Inflammation of the lacrimal gland is uncommon in the dog and neoplasia is rare. Acute dacryoadenitis will occasionally be seen, sometimes with abscess formation, associated with infection of other glands in the head region with pyogenic bacteria. Such cases exhibit pain and tenderness, with a yellow discoloration over the gland. Treatment is by hot compresses and evacuation of the abscess.

Xerophthalmia

Failure of the lacrimal gland to secrete tears may be due to paralysis of the 5th or 7th cranial nerves, or to cerebral disorders. It will result in a dry, shrunken, insensitive cornea.

The Conjunctiva

Various changes may be found in the conjunctiva, indicating either a localised or a generalised disease condition. These changes include hyperaemia, in which the membrane appears congested, due to

XUM

irritation of mechanical or chemical origin, allergy or infection ; anaemia, an indication of generalised anaemia ; chemosis, oedema of the bulbar conjunctiva, due to irritation, allergy or infection ; ecchymosis, subconjunctival haemorrhages, due to trauma ; and follicles, due to chronic inflammation.

Conjunctivitis

Conjunctivitis is undoubtedly the most common eye disease of the dog. Several types may be recognised, and the appearance will vary with the cause.

Acute catarrhal conjunctivitis is characterised, initially, by increased lacrimation, the tears at first being clear and watery, and later mucoid in nature. The conjunctiva is congested, appearing pinkish or red, sometimes swollen and sometimes oedematous. The protrusion of the membranes through the palpebral opening is termed chemosis. Some photophobia may be present, but irritation, except in the presence of a foreign body, is not particularly marked. Marked photophobia or blepharospasm may indicate the onset of a keratitis.

The blood vessels that are engorged in conjunctivitis are the surface vessels derived from the palpebral branches of the ophthalmic artery. These vessels, which are arranged in spirals and folds, must be distinguished from the anterior ciliary vessels, which run in parallel straight lines. The latter vessels, which are visible when engorged, forming a circumcorneal ring, are rarely involved in conjunctivitis, but will become conspicuous in ciliary infections, interstitial keratitis and glaucoma.

Catarrhal conjunctivitis may be caused by bacterial infection, either primary, or secondary to some generalised bacterial or virus infection such as distemper. Injuries to the conjunctival sac may allow infection to enter. Disorders of the lids, such as entropion, ectropion or trichiasis ; foreign bodies such as grass seeds, sawdust or thorns ; allergy to certain grasses, pollens or foods and neoplasia may all result in conjunctivitis.

Catarrhal conjunctivitis may become chronic, particularly if associated with infection of the Meibomian glands, infection of the surrounding skin, obstruction in the lacrimal ducts or interstitial keratitis.

Treatment of catarrhal conjunctivitis is aimed at clearing the condition quickly, in order to prevent its spread to other structures of the eye. Young animals should be examined carefully for the presence of virus infection. Whenever possible, the cause should be eliminated, followed by flushing of the conjunctival sac with saline. Friction from gauze or cotton wool should be avoided as far as possible, as well as the spread of any infection from one eye to the other if the condition is unilateral. Foreign bodies, which are often lodged behind the nictitating membrane can be removed under local or general anaesthesia. In simple cases, the application of a soothing ophthalmic ointment will be sufficient ; in other cases, the antibiotics, in ointment or drop form, will prove useful. In cases where there is marked irritation, local anaesthetics may be used, particularly where blepharospasm is present. It must be remembered that cocaine may have a damaging effect on the superficial epithelium of the cornea, and on the substantia propria, and lignocaine hydrochloride is probably the anaesthetic agent of choice.

Allergic conjunctivitis may be worsened by the use of antibiotics, but will respond readily to an antihistaminic in lotion form (Joshua, 1956).

Cortisone, used as ointment or drops in high concentration, and preferably in the form of hydrocortisone or prednisolone, may be of value in suppressing the exudate phase of the inflammation. The effect is suppressive and not curative, and other therapeutic agents must be used simultaneously.

In no instances should corticosteroids be used in acute bacterial infections unless chemotherapeutic drugs are included, or in degenerative eye diseases (Uvarov, 1958).

In treating chronic catarrhal conjunctivitis, astringents may be necessary, but must be used with care. Zinc sulphate (2 gr. per fl. oz.) and silver proteinate 5 per cent. may be employed. Magrane (1957e) recommends the use of copper sulphate crystal cautery on both the palpebral and bulbar conjunctiva, with immediate irrigation, before the use of routine ophthalmic ointments.

Acute purulent conjunctivitis is similar to catarrhal conjunctivitis, but associated with a purulent exudate, which exudes from the eye and tends to mat the lashes and cause the eyelids to adhere together. There is often co-existent disease of the cornea.

Purulent conjunctivitis has similar causes to the catarrhal type, or may follow a catarrhal condition. It is commonly associated with virus infections such as canine distemper.

The organisms most commonly involved are haemolytic and non-haemolytic staphylococci and streptococci, *Pseudomonas* and *Bacterium coli*. Swabs may be taken to determine the causal organism, making a smear of the exudate from the conjunctival sac. By this method, many types of bacteria may be demonstrated, and it is sometimes impossible to determine the predominant organism. Cello (1956) recommends the use of conjunctival scrapings, using a small platinum spatula, and performing what is virtually a limited biopsy of the conjunctival cells. By this method, only one or two organisms are found to predominate. He also considers that it is possible to evaluate the results of treatment by conjunctival scrapings. The presence of keratinised or goblet cells, bacteria and leucocytes indicates that a change of treatment is necessary, which is of particular importance in low-grade infections. The presence of multinucleated epithelial cells and large numbers of mononuclear cells is a strong indication of virus invasion of the conjunctiva.

Occasionally, new-born puppies are seen with a purulent condition of one or both eyes. This infection sometimes causes the eyes to become open earlier than usual, and sometimes the opening is delayed. If not treated, keratitis and loss of the eye may result. The cause has not been determined, but may sometimes be associated with infections such as canine distemper or virus hepatitis.

A purulent conjunctivitis may become chronic, and

then proves a most difficult condition to treat, due to the tissue changes that have taken place.

Treatment of purulent conjunctivitis will follow the same pattern as with the catarrhal type, with particular emphasis on the use of saline irrigations and antibiotics known to be effective through sensitivity tests. Copper sulphate cautery may be of value, in chronic cases, and irrigation with 1 to 2 per cent. silver nitrate solution, followed by immediate saline neutralisation, may be helpful.

Follicular conjunctivitis is characterised by enlargement of the follicles on the inner surface of the membrana nictitans, and, occasionally, on the palpebral or bulbar conjunctiva. This may lead to trachoma, a hypertrophic inflammation of the conjunctiva, in which subconjunctival lymphatic proliferation is associated with the formation of lymphatic follicles and vascular papillae. This, in turn, may result ultimately in pannus and eventually to corneal ulceration.

The medical treatment of follicular conjunctivitis consists of the use of zinc sulphate or light copper sulphate cautery, followed by cortisone. Candlin and Levine (1952) record the use of beta-ray therapy. For treatment of the condition affecting the membrana nictitans, cauterising the inner surface of the membrane with copper sulphate, followed by boracic irrigations, and the application of copper sulphate ointment twice daily subsequently has been suggested ; or that the follicles be wiped off vigorously with gauze, again followed by the use of copper sulphate ointment. Hodgman (1957) suggests cauterisation with phenol solution. The follicles may be dissected away with fine scissors or, in refractory cases, the third eyelid may be removed.

Angular conjunctivitis has been reported in the dog and may be confined to either the nasal or temporal canthus. The skin of the lids in these cases may also be affected. Treatment is by zinc sulphate, and the administration of vitamin A and nicotinic acid appears to be of benefit.

Pterygium

This is a degenerative condition of the conjunctiva, and consists of a triangular-shaped flattened prominence, sometimes white in colour and sometimes vascular. It lies parallel to the palpebral fissure, with the base at the limbus and the apex extended on to the corneal surface to which it is adherent. Treatment, if it encroaches on the pupillary area and interferes seriously with vision, is surgical, with subsequent repair of the defect.

Dermoid

This is an embryological defect, consisting of some of the structures of normal skin. It is composed of fibrous tissue, hair follicles, sebaceous glands, sweat glands and fat, and may have hairs projecting from its surface. It is usually oval in shape and with a convex surface, imbedded in the conjunctiva, usually at the corneal margin, and sometimes extending well on to the surface of the cornea. A dermoid will usually cause considerable irritation, with a resulting conjunctivitis and pannus formation, and occasionally interstitial keratitis.

Treatment consists of the dissection of the dermoid away from the conjunctiva. Great care is necessary when removing that part imbedded in the cornea as penetration of the cornea must be avoided. The wound may be repaired by undermining the adjacent conjunctiva and fashioning a flap to cover the defect.

The Orbit

Trauma of the Orbit

The orbit may be involved in injuries received from street accidents, kicks, blows, dog fights and gunshot wounds. The degree of injury will range from simple contusion or abrasion of the skin in the orbital region to fractures of the orbital ring.

Fractures of the orbital ring, which may be associated with fractures of other bones of the skull, may be simple or compound. Depressed fractures may cause an exophthalmos, and fractures involving the floor of the orbit may result in optic atrophy due to injury or to pressure on the optic nerve.

Treatment of simple wounds is straightforward and should follow the pattern of careful toilet, debridement and dry dressings. Chemosis and conjunctivitis may follow, and a careful search must be made for damage to other ocular structures. Subcutaneous emphysema is a common complication, and any infection should be treated with antibiotics.

Simple fractures are best left alone, but any depression should be corrected if possible by elevation. In compound fractures, loose fragments of bone should be removed and steps taken to prevent infection.

Foreign Bodies in the Orbit

Wild barley awns are a cause of abscess formation in the post-orbital fat, and will enter this area either through the pharynx or, more commonly, from beneath the nictitating membrane. The abscess will burst either through the supra-orbital fossa, or through the conjunctiva or externally through the eyelid.

Needles may pass through the hard palate or through the pharynx and may lodge in the supra-orbital fossa. Shot and airgun pellets are sometimes lodged in the orbit, and, although located by radiographs, may prove difficult to remove.

Neoplasia of the Orbit

Many types of tumours have been recorded involving the orbit and eyeball, but they are comparatively uncommon. Those most frequently seen would appear to be melanotic sarcomata, originating in the uveal tract, and epitheliomata, originating in the conjunctiva. Metastasis appears to be rapid in both these types. Fibromata, papillomata, sarcomata, osteosarcomata and carcinomata have also been recorded. Lipomata occasionally occur between the extrinsic muscles, producing an exophthalmos and, sometimes, strabismus. The glioma, which is comparatively common in man, but rare in animals, is reported as possibly occurring in an Alsatian by Cotchin (1960).

(*Concluded at foot of col. 1 overleaf*)

Brucella abortus Infection in a Blackface Ewe

BY

C. C. BANNATYNE

Veterinary Investigation Department,
West of Scotland Agricultural College, Oban, Argyllshire

SUMMARY.—(1) *An atypical strain of* Brucella abortus *was isolated from the stomach contents and lung tissue of twin foetuses aborted by a Scottish Blackface ewe.*

(2) *The history of the outbreak is described.*

Introduction

BRUCELLA infections in sheep appear to be uncommon in the United Kingdom. The B.V.A. Handbook on Diseases of Sheep (1955) states that "brucellosis infection of sheep is due to *Brucella melitensis* and does not occur in the United Kingdom." Previously, however, Young (1953) reported the isolation of a strain of *Br. abortus* from the stomach contents of twin foetuses aborted by a Cheviot ewe and also from the ewe's milk. Young also reviewed the relevant literature. This note records the isolation of a strain of *Brucella* from the stomach contents and lungs of twin foetuses aborted by a Scottish Blackface ewe.

History

The farm carried a permanent hill stock of 400 breeding Scottish Blackface ewes. On the arable ground were a further 4 batches of breeding ewes which were confined to separate fields. The 4 batches consisted of (1) 65 ewes cast from the hill flock the previous autumn, (2) a permanent flock of about 60 Border Leicester × Suffolk ewes, (3), 80 cast Blackface ewes, and (4) 65 North Country Cheviot fourth crop ewes. The 2 latter groups had been purchased the previous autumn. Lambing in the low ground sheep was due to commence at the beginning of April and during the last 2 to 3 weeks of pregnancy a fairly extensive outbreak of abortion occurred, involving the 2 recently purchased groups. A diagnosis of vibriosis was eventually confirmed but during the investigation twin foetuses, about 3 weeks premature and aborted by a 4-year old Blackface hill ewe, were collected for examination. The foetuses were fresh and autopsy revealed no abnormal features, other than the presence of numerous white flocculi in the stomach contents. Cultures from the latter were sown on 7 per cent. horse blood agar and incubated at 37° C. in 10 per cent. carbon dioxide and also in air. There was no growth in air but a good growth was noted after 48 hours incubation in carbon dioxide. The colonies were of the mucoid type and smears revealed an organism with the morphological and staining characters of *Brucella*. Direct smears from the foetal stomach contents and lung tissue, stained by the modified Ziehl-Neelsen technique (B.V.A. Handbook on Diseases of Sheep, 1955), also showed large numbers of the same organism.

The ewe concerned was not available for examination on the day the foetuses were collected (April 4th) and was not seen until April 22nd when she was blood sampled along with 3 other Blackface ewes from the same area, which were believed to have aborted. A sample of the udder secretion, which was very scanty, was also taken but attempts to recover *Brucella* from it were negative. Serum from the aborted ewe, tested against standard *Br. abortus* antigen, produced complete agglutination at a dilution of 1/160 and slight agglutination at 1/320. No *Brucella* agglutinins were demonstrated in the sera of the other 3 Blackface ewes and a further 12 ewes in the low ground groups, all of which had aborted. A sub-culture of the organism isolated from the foetus was sent to Weybridge for typing and was reported as having "the cultural and biochemical characteristics of *Brucella abortus* and the serological characteristics of *Brucella melitensis*."

Discussion

Several years previously there had been a serious outbreak of bovine abortion on the farm, diagnosed by the serum agglutination test and the infection was eventually controlled by the use of S.19 vaccine. There was, however, no opportunity to type the organism implicated in this outbreak and although the *Brucella*-infected ewe was technically a hill animal, she habitually grazed the lower parts of the hill and had access to the low ground on which the cattle were running. It is possible, therefore, that the infection was of bovine origin. Aberrant strains of *Brucella* are not uncommon in this and other countries (Dalrymple-Champneys, 1953) and have been isolated on several occasions in this laboratory from aborted bovine foetuses.

Acknowledgment.—I should like to thank Mr. J. R. Lawson, M.R.C.V.S., for typing the strain of *Br. abortus*.

(*Concluded at foot of col.* 1, *p.* 661)

Diseases of the Canine Eye, Part I.—*Concluded.*

Retro-bulbar Abscess

Orbital cellulitis may result from post-orbital foreign bodies, septic teeth or sepsis in the accessory nasal sinuses. It must be distinguished from glaucoma.

Symptoms exhibited will be oedema of the lids, chemosis, exophthalmos, immobility of the eyeball, oedema of the surrounding tissues and marked pain, particularly of jaw opening.

Treatment is based on securing drainage from behind the last upper molar and the use of antibiotics. A panophthalmitis is a frequent sequel.

Eosinophilic Myositis

This disease, of unknown aetiology, is characterised by an increase in the eosinophil count, and by symmetrical swelling of the masseter, temporal and pterygoid muscles. There is usually some degree of exophthalmos, due to the pressure from the enlarged muscles on the retrobulbar tissues, chemosis and hypertrophy of the membrana nictitans.

Part II will be published in THE VETERINARY RECORD *next week.*

Sidelight on Siberia

BY

R. H. MERLEN

Royal Veterinary College, London

As readers know, THE VETERINARY RECORD *occasionally publishes articles of general, rather than of strictly professional interest. We think readers will enjoy the following authentic account, written by a veterinary surgeon, of the early 20th century agricultural settlement of Siberia.*

THE great fact which must be borne in mind when considering Russia's territorial possessions east of the Urals is that, contrary to tradition, folk-lore and fable, Siberia is most emphatically not one vast howling wilderness "qui n'a guere pour habitants que des sauvages, des exiles et ceux qui les gardent, et qui est desole pendant neuf mois de l'annee par un froid horrible," as it used to please the Victorian encyclopaedist Bouillet to put it. And it must be remembered that if the northern half of the country is, admittedly, a huge unprepossessing expanse of forest and tundra which stretches away to the polar landscapes of the shores of the Siberian Ocean, then precisely the same thing occurs in Canada, and that in this case the knowledge of the existence of a frozen north is never allowed to obscure the fact that the south is a land of promise flowing with milk and honey.

Nor must the idea be entertained that it is only comparatively recently, and as a result of the Revolution, that the possibilities of Siberia, and all the wealth in it, came to be fully appreciated and that steps were taken to convert it from a dismal penal settlement into one of the foremost agricultural regions of the world. In point of fact, Siberia's rôle as Russia's Devil's Island—an association of ideas which the country has never succeeded in living down—came to an end as long ago as 1900 and for some years before that time the government in St. Petersburg had been applying itself to working out a very different and more enlightened policy for its eastern provinces, which was designed to solve some of the pressing difficulties which confronted it on the home front.

At that time the crux of Russian internal affairs was the deplorable condition of the agricultural peasants who, down-trodden and oppressed by the landowners on their little medieval farms, constituted a perpetual menace to the internal security of the country. Thanks to the political power of the land-owning classes there was no hope whatsoever of introducing any measure of reform into the law relative to land tenure, at least in metropolitan Russia.

But in Siberia everything was different in that the whole country was either crown land or the personal property of the Czar. In consequence, the new Siberian policy which was evolved was based on the very sound premise that the hundreds of thousands of acres of good farm land lying fallow and uninhabited in Siberia were the ideal place on which to settle large numbers of discontented peasants and give them the chance of rehabilitating themselves out of the reach of their oppressors.

Although the prevailing political tension between Russia and Japan, and the military considerations associated therewith, exerted their important influence, it was, primarily, with the view of transporting malcontent peasants east of the Urals that the construction of the Trans-Siberian Railway was begun in 1890. Once put in hand the work proceeded very slowly and it was not until 10 years later that the link-up with the Pacific was to all intents and purposes completed and Moscow was in virtual communication at last with Vladivostock.

To transport peasants to Siberia and settle them on farms for which they paid what amounted to a rose-rent direct to the government was one thing; to ensure that they did not slip back again into the misery and poverty which they had so recently left behind them was quite another. If the Siberian countryside was not to see a duplication of the agricultural misery which was everywhere apparent in Russia it was absolutely essential for the success of the land settlement policy that there should be a free outlet for all locally produced commodities. The supply of goods was there, or shortly would be, it remained to create a demand which would absorb the supply. Confronted with this problem the Russian government turned to the commercial centres of Europe as the most accessible and go-ahead, and as the most likely to absorb large quantities of Siberian produce.

Opening up the Country

They were right in their choice; prosperous, adventurous and bounding with energy, the prospect of tapping Siberian resources made a profound appeal to the *avant-garde* of the Victorian business world, not so much, perhaps, in England but certainly in Germany and Scandinavia and in particular in Denmark where the flair for dealings in agricultural produce has always been a well-known national trait. Accordingly, to Siberia the representatives of European business went under the aegis, and with the full support and blessing of, the Russian government the success of whose great experiment in Siberia was bound up in the closest

---

Brucella abortus **Infection in a Blackface Ewe.**—*Concluded.*

References

B.V.A. Publication No. 6 (1955). Diseases of Farm Livestock. Section II, Diseases of Sheep. P. 58.
———. (1955). *Ibid.* P. 62.
DALRYMPLE-CHAMPNEYS, W. (1953). *Vet. Rec.* **65.** 99.
YOUNG, S. (1953). *Ibid.* **65.** 247.

way with the success of their commercial operations.

My grandfather, who was at that time engaged in building up a number of fairly extensive commercial undertakings in other parts of the world, very quickly saw in Siberia much the same sort of opportunities as those offered by the South Africa and California of the day and, having the strength of his convictions, took the bull by the horns and was one of the first in the field in Russian Asia.

From the commercial and agricultural point of view, Siberia, that is to say Siberia below the 55th parallel, is divided into 2 halves by the river Ob. To the east of this line of demarcation the country is covered by thick forests which, in addition to their valuable reserves of timber, also contain large numbers of fur-bearing animals and game birds of all descriptions all of which possess a high commercial potential. To the west of the river is the open plain which stretches away, grass-covered, to the north-west right up to the Urals and which constitutes the great dairying and agricultural area. To the south the plain gives way progressively to the great Khirghiz Steppe which becomes more and more arid, and only suited to supporting a nomadic way of life, the closer it approaches Lake Balkash.

In conformity with this geographical division, it was along the Trans-Siberian Railway at such places as Kurgan, Omsk and Novonikolaev, as well as in towns along the banks of the Ob, that the European business firms interested in the development of Siberian agriculture set up their headquarters and began operations.

At least as far as the export trade was concerned, Siberian agricultural produce very largely consisted of butter and, to a less extent, of eggs and meat; and in view of the fact that butter-making in Russia was still in a primitive stage and that the end product still closely resembled the oriental ghee, the first task involved was to instruct the peasants how to make a butter which was likely to prove attractive and, therefore, saleable, on European markets. With this end in view, the Russian government set about establishing a number of dairying institutes in the main agricultural centres at which selected peasants were taught the modern techniques of butter-making and from which they were returned to their villages as the managers of the village dairies. At the same time modern dairying equipment was imported from Europe on a very large scale and sold to the villages either for cash or, far more commonly, against future butter sales. On the whole the peasants welcomed the introduction of the new techniques and appreciated the fact that what was being done was very largely for their exclusive benefit. In the more backward villages, however, all plans for improvement were boycotted and the new dairy equipment smashed to pieces as inventions of the devil.

Natural Communes

The communal system, which became so famous in later days and whereby a whole village was regarded as a single economic entity whose financial, and other, affairs were handled by the head-man, began very early on and arose perfectly naturally from the basic poverty and illiteracy of the average villager and from the isolation of many of the villages. Originally it had nothing to do with any political ideas at all.

Village dairies were established and run as combines with each household contributing so many buckets of milk a day to the common churn, and receiving a *pro rata* share of the market price when the butter came eventually to be sold. Each household, again *pro rata*, contributed so much towards the instalments which went to pay for the equipment.

Since the majority of the peasants were hardly able to count, let alone understand figures, the butter had to go to market under the charge of the head man, or his representative, who sold the produce and received the money for it in the name of his fellows. Since work with the herds tied the villagers perpetually down on the farms—there was, of course, no mechanisation—and since transport was difficult to come by, it became the practice for the head-man while in town on butter-selling missions to make purchase of consumer goods for the villagers at home. With time this developed into the making of bulk purchases, which, in any case were cheaper, and thus village shops came into being, run on a co-operative basis, where the villagers could buy what they wanted either for ready money or on a tally system against future milk contributions. In this way it will be seen that the *kolkhozes* arose as a perfectly natural development of local conditions and predated the revolution by at least a couple of decades.

A Veterinary Service

In addition to the dairying establishments, the Government saw to it that an efficient veterinary service was deployed over the whole of the dairying districts, and efforts were made to co-ordinate the activities of all concerned by holding frequent conferences between the local government officials, the veterinary services and the representatives of the business houses. As far as the veterinary services were concerned, there was little that could be done at that time to counteract the constantly recurring outbreaks of foot-and-mouth disease which often

seriously reduced the milking efficiency of the herds. Rabies was rampant over the whole of the country, and in those days the nearest Pasteur Institute at which the victim of a bite could apply for treatment was hundreds of miles and several days' journey away at Samara on the banks of the Volga.

Once it had been made, the butter was brought into the market centres in tubs and was protected from the powerful heat of the summer sun by layers of wet grass. Having arrived it was exposed for sale in the *postoyalni dvori,* the courtyards of the caravanserais, where it was purchased by competitive bidding from members of the staffs of the business firms. Once purchased it was repacked by the exporter and consigned to the Trans-Siberian Railway for transit.

Riga, a port on the shores of the Baltic which was usually free from ice in the winter, was the great port of outlet for Siberian produce. In view of the fact that the summer months, the optimum period for the dairying industry, were always very

hot and that the journey to the coast took several days to accomplish, it is obvious that some form of refrigeration was essential if the butter was to arrive at its destination in anything like a wholesome and edible condition. In this matter, as in all others, the Trans-Siberian Railway co-operated to the fullest extent with the Government plans for assisting exports and did everything in its power to help the commercial firms. It had long been the custom in every household in Siberia to collect quantities of ice in the winter and store it in underground cellars outside the house thus making a primitive refrigerator which could be used as a summer larder. This simple practice was employed by the railways in a modified form to supply its own refrigeration service in which the supplies of ice so collected in underground caverns were used to fill the containers in the goods vans, an arrangement which, though make-shift, was highly efficient. Later on mechanically refrigerated vans began to make their appearance and these were used to supplement the number of the older vehicles. There is one point in connexion with Siberian trading which for the historical record, if for nothing else, must be most emphatically emphasised and that is that there was no question at any time of the exploitation of the Siberian peasants by the representatives of European business. In common fairness to all concerned it must be categorically stated that neither my relative, nor any of his contemporaries, ever purchased valuable merchandise from the Siberians in exchange for looking glasses and strings of coloured beads. This type of transaction was impossible in Siberia, and the whole system of buying in the open market by competitive bidding with peasants who were completely free to sell to whom they chose, was more than sufficient to ensure that nothing ever changed hands at a figure below its proper market value. In addition to these safeguards the current quotations on the European markets for all types of produce were printed in the local newspapers and were always there for reference if so required.

Concurrently with the development of the dairying industry, arable farming also began to make considerable strides forward in western Siberia. In view of the fact that up to that time Russian agriculture was still virtually in the sickle and rake stage, this new development was of considerable interest to those European firms who were concerned with the manufacture of agricultural implements. In this particular field it was the American and German

firms which forged well ahead and exported large quantities of machinery to Siberia with the full support of the Russian government. The British lagged very much behind and they could never be induced to manufacture light reapers and binders suitable for the Siberian horses which were, of course, far smaller than the British Shires and Clydesdales. Once imported and purchased by the villages, this machinery was badly cared for and was, in the majority of cases, left out in the fields all the year round at the mercy of the rigours of the Siberian climate.

Trade in Game Birds

The long freeze-up which occurred during the Siberian winter, coupled with the fact that advanced techniques in the winter feeding of milking stock were as yet unknown in the country, brought about a complete cessation of milk production, and consequently, a standstill of the export dairy trade, for something approaching 6 months in the year. This being so, in order to off-set the almost vertical drop which occurred annually in the graph of our commercial operations, we began very shortly after our arrival in Siberia to take an increasingly progressive interest in the traffic in game birds, which was one of the great winter activities. This undertaking differed markedly from the other, principally because the birds were not brought into the town centres but had to be sought out in the local "*yahrmarkts*," the annual village fairs, and this in turn involved long, and often arduous, sledge journeys deep into the forest country on the right bank of the Ob.

Capercailzie, ptarmigan, black cock, or whatever the birds were, none were shot but all were netted by the local peasants who twisted their necks forthwith, arranged the limbs and plumage and then left them for a few moments by which time they were frozen solid. The birds were later taken into the village fairs where, cash boxes chained to their sledges, revolvers on hip, the buyers waited to make their purchases. After these had been completed and the consignments made up, an approach was made to the village transport contractors and arrangements made for the birds to be conveyed to railhead; for days after a "*yahkmarkt*" the tracks were blocked by slow-moving sledge convoys plodding along and constituting a source of intense irritation to the post drivers and the passengers in fast troikas. And there being no highway code and Siberian driving always being of the pull-devil-pull-baker order, the drivers of the faster vehicles cleared a way ahead for themselves by the simple expedient of flogging peasants and their sledges into the snow drifts at the sides of the road.

In all these transactions the standard of honesty was absolute, and consignments of birds which might easily number many thousands of brace were never found to be short of the number specified by so much as a single bird when they eventually arrived in London.

The traffic in game birds, however, was by no means merely confined to the woods on the east bank of the Ob and, in theory at any rate, Manchuria had very considerable possibilities to offer particularly in the pheasant trade. To Manchuria, accordingly, my relative went, braving sporadic outbreaks of bubonic plague to see what could be made of the opportunities there. Manchurian standards of honesty, however, not coming up to the Siberian, and a warm spring in the London vaults having revealed that almost the entirety of one consignment had been brought up to the specified weight by filling them with ice, the Manchurian department was closed down without very many regrets on either side.

The efficiency of the somewhat primitive refrigerating arrangements resorted to by the Trans-Siberian Railway coupled with the preservative effects of the intense cold of the Siberian winter is well illustrated by the following incident. Having gone down as far south as Lake Balkash, not far from the frontiers of western China, in an exploratory expedition, my relative purchased a small consignment of red-legged partridges from the Khirghiz nomads by way of an experiment, and in due course these birds made the journey by sledge and rail right across Siberia and Russia and eventually reached London. Not receiving any proper appreciation on the London market, they were packed up again and exported to America where, according to reliable reports, they were received with éclat on the dinner tables of New York.

The Siberian export trade prospered very considerably, in fact to such an extent that it flooded the London market, and we were forced to seek an outlet for it and for our extensive Russian interests, by opening up a southern outlet through Odessa through which the southern European markets could be reached.

If the foregoing account of the commercial activity which prevailed in Siberia before the First World War conjures up a somewhat different picture of the country from that which is usually envisaged, there are many other points in which life in pre-revolutionary Siberia differed markedly from what it was commonly supposed to be.

A Contented Society

In the first place, almost from the day that he was settled in Siberia, the Russian peasant underwent a profound and heartening metamorphosis and changed from a down-trodden and miserable medieval serf into a sturdy and independent-minded yeoman farmer. There is a close parallel here with the case of those Israelis who, liberated from European ghettos and returning as farmers to their homeland, changed into something entirely different from what they had ever been before. Once settled on his own farm, the farm that had been the family dream for generations, the Siberian as he now was, had no other interests at all outside his farm and this explains the marked political apathy which was encountered in Siberia when it came to recruiting men for Kolchak's counter-revolutionary army.

With regard to everyday life in Siberia there was, in the new towns which had sprung up as the result of the immigration policy, or which had developed from obscure villages as the result of the advent of the railway, an atmosphere very similar to that which obtained in the "Wild West" of America during the period when that country was in the

course of being opened up. Living accommodation was at a premium, there was an atmosphere of hustle, business men rubbed shoulders in the streets with raw-boned pioneers, and little shanty banks and offices followed the advance of civilisation into the surrounding wilderness. Novonikolaev, in particular, a most important de-training centre and later the junction where the line from Barnaul met the Trans-Siberian Railway, was one vast sprawling shanty town of wooden huts which must have had many counterparts in contemporary California. The comparison was, however, not quite complete since in Siberia, of course, there were no Red Indians. In general security was at a very high level, for while there was a certain amount of brawling, and even shooting, round the drink shops in the poorer fringes of the towns, once the open countryside was reached there was nothing left to fear and cases of highway robbery were so rare as almost to be unknown.

In the older towns, and it must be remembered that such places as Barnaul were founded at the end of the eighteenth century, the standard of civilisation and of social life was high. There were the clubs, the dinner parties, the literary salons, the drama groups and the learned societies. In summer there were the *datchas* to go to, and the carriage picnics and the boating parties to enjoy. In winter there were any amount of dances where beneath their plaster scollop shell, as it might have been at Quaglino's, the band of the Fire Brigade—a vitally important social service in the predominantly wooden Siberian towns—attacked with gusto the latest hits from the shows in London and Vienna. In winter, too, the town square was flooded and on the skating rink so formed and surrounded by fir trees hung with fairy lights which had been planted on the snow banks, the local gentry skated or pushed their girl friends round on sledges.

Life was free from all political troubles, and as far as we were concerned never once in the 20 years we were in Siberia did we have any unpleasant relationships with the police, or any of the political organisations. In point of fact, so free were conditions that we had a private code of our own which we employed for business purposes and in which we sent out telegraphic messages for many years without ever being asked to furnish the authorities with a copy of it. There was complete freedom to travel, to employ and discharge whom one chose, to build and open branches wherever one thought fit. Private enterprise of all kinds was encouraged and at one time we owned a saw and corn grinding mill for which we imported the machinery from Germany and which was strategically situated on the banks of the Ob.

But all this applied only to Siberia; in Russia things were very different. There the peasants were discontented, sullen and dirty, the bourgeois cared only for themselves and the chicanery and swindling of all kinds which the middlemen attempted to introduce into every department of business was quite past understanding. Moreover there was always the ever-present danger of being involved in the treacherous and swift undercurrents of the political affairs of the day which were capable of bringing sudden and totally unmerited punishment on the head of the innocent bystander.

In due course Siberia was involved in the tremendous events of the Russian Revolution. My relative stuck to his posts until 1920 and in so doing weathered the first brunt of the revolutionary storm in the course of which he was mobilised into the Siberian Home Guard, saw Barnaul twice taken by assault and the offices twice sacked and burnt to the ground. By the sheerest good fortune he succeeded finally in making his way out of the country and reaching Shanghai, and his arrival in Italy, long after he had been given up for dead, in the same down-at-heel Russian boots and tattered jacket in which he had left Barnaul had an almost Charlie Chaplin touch of pathos about it.

That he survived all these vicissitudes to be finally knocked down and killed by a car in a Somerset lane provided a somewhat ironical end to an active and tolerably adventurous life.

MIDDLE STUMP

Human nature being what it is, most of us find it hard to suppress a thrill of morbid satisfaction on seeing a mature, formidable and versatile batsman bowled out middle stump. But that, translated into literary terms, happened in these very columns last week. A paper published on the subject of Obstetrics, the author being of the male sex, trespassed (rashly?) upon human childbirth. The unplayable yorker followed. In a masterpiece of understatement a woman member of the profession who is herself a mother observed, "now that he is telling us how we have babies I may be judged experienced enough to comment."

What has our author to reply to that? What reply, indeed, is possible? Barristers, by tradition, accept in their own persons the complaints, the disabilities and the shortcomings of their clients; they are, vicariously, the clients themselves, and the story is told of one advocate who exclaimed, "look at this child before the court. I bore her not thirteen years ago!" But veterinary surgeons cannot avail themselves of this form of address; they are men of science and must take natural phenomena as they find them. Our author must face the humiliating truth: in one simple sentence a member of the weaker sex has sent his middle stump flying. He has, in the vulgar parlance, had it. Well may he write to us, on reading this note, the memorable words of Mr. Micawber: "The undersigned is *crushed*!"

DOG LICENCES

The number of dogs, including hounds, licensed in Britain during the year ended March 31st was 2,721,285, compared with 2,681,942 in 1959.

Current Literature

ANNUAL REPORTS

Milk and Milk Products Technical Advisory Committee: Sixth Annual Report, 1959

This brief publication provides a pleasant reminder of the efforts that are being directed towards the maintenance and improvement of milk quality. Under the recent chairmanship of Professor A. M. Duckham of the Department of Agriculture, Reading University, a Committee of 17 persons, representing wide interests, has been kept in close liaison with a very large number of bodies, including the B.V.A., the Agricultural Improvement Council, the Commonwealth Bureau of Dairy Science, etc., and has investigated a wide variety of problems relating to such matters as antibiotics in milk, cheese grading schemes, milk powder in bread, bottling of ultra-high temperature treated milk, the packaging of liquid milk, and the disposal of dairy effluent.

The main Committee has 3 Sub-Committees deal-respectively with milk, powder, its packaging, quality, bacterial standards, etc., cheese, its quality, problems of manufacture, legal standards, etc. Milk hygiene, covering a wide field, including the detection of dairy sanitizers, the cleansing of road and rail tankers, hygienic aspects of bulk-collection of milk, and problems of milk dispensing and vending machines.

The report is brief and in general terms, but would no doubt provide a guide for anyone wishing to seek information upon any particular aspects of milk hygiene or quality.

Canada Department of Agriculture: Report of the Veterinary Director General for the year ended March 31 1958.

This Report, introduced by the Veterinary Director General Mr. K. F. Wells, V.S., D.V.M., contains concise accounts of the activities of the three sections of the Health of Animals Division of the Canada Department of Agriculture during the 12 months under review. The Division is concerned primarily with disease control and meat inspection.

Contagious Diseases Section. No new serious animal disease appeared in Canada during the year. The country continued to remain free of foot-and-mouth disease—it has apparently occurred in Canada in only two years, 1952 and 1953—and also of horse mange and sheep scab, diseases once prevalent but since eliminated. Only one outbreak each of anthrax and swine fever was reported. Scrapie was identified on 5 premises; all infected flocks were destroyed.

Brucellosis has long been of economic importance to Canada's cattle industry and is estimated to be costing $9 million a year in lowered milk production, loss of calves, and replacement of infected cattle.

From 1947 the disease was tackled by blood testing and calfhood vaccination on a voluntary individual herd basis; some 158,000 cattle in 4,300 herds were involved in the scheme. But during 1957-58 the eradication scheme was changed from a herd to an area basis. This change of plan was well received, 60 areas with an estimated cattle population of 736,000 head, being accepted into the scheme. During the 12 months under review nearly 1 million calves, representing approximately 65 per cent. of the female calf population, were vaccinated.

Progress continued in the bovine tuberculosis eradication plans, and testing, which has involved over 10½ million cattle, or an estimated 93 per cent. of the total population, has been carried out in all areas except parts of Saskatchewan, Alberta and Newfoundland. During the period under review some 2.3 million tuberculin tests were conducted; reactors, which are slaughtered with compensation, were less than one in a thousand.

Rabies appears to be on the increase and during the year 582 cases were confirmed, more than treble any previous year's figure. Of these, 31 were in dogs and 397 in foxes. The remaining 154 were in other animal species; the Report does not, unfortunately, say what these species were. The disease was confined almost entirely to Ontario and Quebec provinces, but 2 isolated cases, 1 in British Columbia and 1 in Northwest Territories, probably caused the authorities some misgivings, especially as the disease is seemingly becoming firmly entrenched in wild life. Some 26,000 dogs and pets were vaccinated.

A few outbreaks of Newcastle disease and fowl typhoid were reported. Fowl pest has never been seen in Canada.

The Contagious Disease Section is also responsible for regulating the proper disposal of garbage to prevent swine fever and poultry diseases, disinfecting vehicles and crates used for animals and poultry, and controlling the importation, manufacture, sale, and use of biologics for livestock. The importation of semen for artificial insemination is allowed only only under strict precautions against the introduction of disease.

Meat Inspection Section. This section of the Division continued its very important function of maintaining a high standard of quality and safety in the country's meat and meat products. Regular ante- and post-mortem inspections were conducted at 112 slaughtering and 64 meat processing establishments.

There has been a growing demand by foreign countries for Canadian meats and meat products, and exports of these were nearly 40 per cent. above the previous year's figures. By contrast imports increased by only 16.5 per cent. As is to be expected, the U.S.A. was the main source of imported meats; next, however, were Australia and New Zealand, who supplied considerable amounts.

The report on this section contains very comprehensive statistics, including a full list of the pathological conditions encountered during inspection. An unusual item in a list of this kind is the condemnation for TB of some carcases and organs of bison.

Laboratory Section. The Animal Pathology Laboratories, formerly a Division on their own and comprising a headquarters and research centre and 4 branch laboratories, were made a section of the

Health of Animals Division at the beginning of the year.

Their duties, which are of immense importance to the Division, included the preparation of biological products—over 4½ million doses of tuberculin were prepared during the year—the examination of field specimens, and research. Personnel of this section also inspect commercial establishments engaged in the manufacture and distribution of veterinary products under licence from the Canada Department of Agriculture. W. E. L.

Federation of Rhodesia and Nyasaland: Report of the Secretary to the Federal Ministry of Agriculture for the year ended 30th September 1958.

This is not an easy Report to follow for it deals not only with the Department of Veterinary Services but also with the three other Departments—Research, Extension Services and Tsetse Control—that go to make up the Federal Ministry of Agriculture. And since these three also deal in varying degrees with animals one is constantly finding references to livestock mixed up with comments on potatoes, citrus fruits, cotton pests, and other items of general agricultural interest.

The matter is further complicated by the fact that the Federal Government does not operate to the same extent in all three constituent territories of the Federation. In Southern Rhodesia, for example, it appears to be responsible for all aspects — health, husbandry, trade, etc. — of the livestock industry. But in Northern Rhodesia and Nyasaland animal health, and to a large extent animal husbandry as well, remains a Territorial responsibility. Consequently the Report contains relatively few references to livestock in those two territories and it is, in effect, mainly an account of the situation in Southern Rhodesia. Within this limitation it is comprehensive and very informative.

The Southern Rhodesia Veterinary Department consists of two branches, Field and Research, each under an Assistant Director. The staffing position was satisfactory following recent improvements to the conditions of service. The Department had a full burden to engage its attention, foot-and-mouth disease, rabies, trypanosomiasis, tick-borne diseases, and infertility conditions, all contributing to the load.

An outbreak of foot-and-mouth disease, carried over from the previous year, caused anxiety, especially in view of the proximity of the Wankie National Park with its dense game concentration. Control was eventually obtained by inoculation with field virus and the maintenance of cordons, manned first by police and, when they were subjected to intimidation, later by military personnel. Steps are now in hand to erect a game fence along a boundary of the Park. The Report again stresses the urgent need for vaccines against the three S.A.T. virus types in Africa.

There has been a tendency for tsetse fly to expand in Southern Rhodesia recently; in consequence the incidence of trypanosomiasis has increased, in some instances quite markedly. Control of the disease is expensive in time, manpower, and drugs, but until the fly can be eliminated—and in the extensive areas of Southern Rhodesia this is virtually prohibitive in cost—this is unavoidable. Nearly 70,000 inoculations were carried out.

Tick-borne diseases were kept at an encouragingly low level. There was, however, some evidence of increasing resistance of the blue tick to acaricides, due largely, the Director of Veterinary Service suggests,, to stockowners trying to economise by using dips, and particularly the organic synthetic dips, below proper strength. The Department recommends adherance, in part at any rate, to arsenic in dip tanks.

Appreciable progress in the campaign against tuberculosis is recorded. The voluntary eradication scheme, with compensation for reactors destroyed if these amount to more than 5 per cent of a herd, is growing steadily and it is estimated that more than two thirds of the dairy herds in Southern Rhodesia are now under test.

Anthrax was present in several native reserves; some 300 livestock deaths occurred and over 180,000 head of stock were vaccinated. Quarter-evil accounted for 1,300 known deaths despite the fact that adequate facilities exist for calves to be protected at a cost of only 3d. a dose for vaccine.

Two diseases affecting breeding are scheduled, namely brucellosis and "epi-vag" (contagious epidymitis of bulls and contagious vaginitis of cows). Although the former is readily and cheaply controlled by S19 vaccination insufficient use is made of it by stock owners, due no doubt to the absence of abortion storms.

"Epi-vag" presents a more difficult problem. Accurate diagnosis is difficult, and since no reliable vaccination or treatment is known, only quarantine can be applied for control. The difficulty then arises of deciding when infection no longer exists so that quarantine may be lifted. Fortunately the disease appears to be self-limiting and there has been a gradual improvement over the last 3 years. The greater use of artificial insemination in both infected and clean herds has also helped considerably.

Rabies continued to be troublesome despite strenuous campaigns against it. The disease was confirmed in 33 dogs, 6 jackals and 2 humans, bringing the total number of positive cases since the first outbreak in 1950 to 865. There has, however, been an encouraging decline in incidence during the past 3 years and the fact that most of the current year's cases were in districts along the colony's borders suggests that they were due to re-introduction of the disease from infected neighbours.

The large number of 135,357 dogs were compulsorily vaccinated with Fleury strain vaccine during the year, bringing the total since 1951 to 838,000. Three cases of immunity 'breakdown' were encountered; these are being carefully investigated.

Poultry diseases seen included fowl pox, fowl cholera, fowl typhoid and coccidiosis. No Newcastle disease or B.W.D. was encountered.

The research branch of the Department was engaged mainly on routine examination of field specimens and the production of a few vaccines. Other vaccines are obtained from the Onderstepoorte

Laboratories for re-sale. Investigations were carried out on "epi-vag", vibriosis, anaplasmosis, fascioliasis, stilesia, schistosomiasis, and some new trypanocidal drugs.

A substantial increase took place in the total cattle population of the Central African Federation during 1957 and the census revealed nearly 5 million head. Of these 3.4 million are in Southern Rhodesia, nearly 2 million of them belonging to Africans and 1.4 million to Europeans. The Report states that the Federation has reached self-sufficiency in beef production on present levels of consumption as determined by the purchasing power of the population.

It is readily evident from the Report that the Director of the Veterinary Services, Mr. D. A. Lawrence, B.V.Sc., and his staff have a full time job on their hands which they are tackling vigorously.

W. E. L.

ABSTRACTS

Effects of Certain Antibiotics in the Treatment of Vibriosis in Sheep. HULET, C. V., ERCANBRACK, S. K., PRICE, D. A., HUMPHREY, R. D., FRANK, F. W., & MEINERSHAGEN, W. A. (1960). *Amer. J. vet. Res.* **21.** 441.

Vibrionic abortion appeared in 2 flocks of ewes. They were divided into 3 groups: (1) untreated; (2) each ewe given 80 mg. chlortetracycline; (3) each ewe given injections of penicillin-streptomycin (800,000 units—1.0 g.) on 2 consecutive days.

Treatments (2) and (3) appeared to increase the chances of ewes having at least one live lamb but the original paper would repay study by those interested.

Prevention of White Muscle Disease in Lambs by Oral and Subcutaneous Adminstration of Selenium. KUTTLER, K. L., & MARBLE, D. W. (1960). *Amer. J. vet. Res.* **21.** 437.

Evidence is presented to suggest that lambs are protected from white muscle disease if their dams are given subcutaneous injections of barium selenite during pregnancy. In the experiment described, a single injection of 0.05 g. $BaScO_4$ per 100 lb. bodyweight, given to the ewe 3 to 10 weeks before parturition, appeared to be satisfactory.

Sodium selenite at a dose rate of 0.075 g. per 100 lb. bodyweight caused death, but barium selenite produced no symptoms when given at the rate of 0.80 g. per 100 lb. bodyweight.

The Veterinary Surgeon in Statistics. HERTER, R. (1959). *Tierärztl. Umsch.* **14.** 393.

A wealth of statistics is presented here. The first table shows the numbers of the profession in different countries related to headage of the various animal species (there are many gaps in the information on Iron Curtain countries). The author estimates there are 140,000 to 150,000 veterinary surgeons in the world. As far as absolute numbers go, in Europe, Western Germany, Italy, and Spain lead the poll. West German statistics include the breakdown of the profession into its various groups (information dating from 1869 for Prussia, and 1876 for the Reich), geographical distribution (province and major cities), and the average numbers of different animal species per practitioner in general practice with a rough comparison with other countries. Practitioners are also tabled as to age group and a small section deals with women practitioners separately. Information is provided as to the infections contracted through professional work where, again referring to West Germany alone, brucellosis is by far the most widespread, dangerous, and, in after-effects, most serious disease. Deaths from all causes are tabulated as to age group. The numbers of students in the various German faculties over the past 90 years are tabulated. An attempt is made to estimate the annual sum involved in the agricultural industry in payment for professional attendance, for drugs, for livestock insurance, and to institutes and laboratories (*e.g.* meat inspection fees). The information has been assembled from 30 different sources.

A. D. W.

BOOKS RECEIVED

Annual Report for 1959 of the British Empire Cancer Campaign. Parts I and II.

An Introduction to Animal Husbandry in the Tropics, by G. Williamson and W. J. A. Payne. Longmans, Green & Co. Ltd. 48s.

Achievement—Some Contributions of Animal Experiment to the Conquest of Disease, by Geoffrey Lapage. W. Heffer and Sons Ltd. 18s.

The Jaws and Teeth of Primates, by W. Warwick James. Pitman Medical Publishing Co. Ltd. 105s.

The Insecticide Dichlorodiphenyltrichloroethane and its Significance. Edited by P. Müller. Vol. II, *Human and Veterinary Medicine*. Edited by S. W. Simmons. Birkhauser Verlag. 66 Fr.

News and Comment

THE ROYAL VETERINARY COLLEGE ASSOCIATION

We are indebted to a correspondent for the following note.

The fifth annual dinner of the Royal Veterinary College Association was held at the College on May 6th. The guest of honour was Mr. E. Brayley Reynolds. Fifty-eight members attended.

At 7.30 o'clock the company adjourned to the Refectory to enjoy an excellent dinner. There was only one defect: the babble of conversation was so intense that it was difficult to communicate with one's neighbour except in a voice that could only add to the clamour. In due course the President was able to invite old students of the premier Royal Veterinary College to do honour to the Loyal Toast. This being accomplished the President told the company that through the energy of the secretary, Mr. E. K. Price, and the treasurer, Lt.-Col. Dennis Green, the association was on a firm footing. Membership had increased during the past year; the increase was progressive but far too slow. He

regretted that the inflow of younger members did not come up to his expectations. Older members had responded well. It would appear that one had to be qualified about 20 years before one's thoughts turned again to the place which gave one life! The treasurer could report a satisfactory state of affairs. They had been able to make a start towards building up a fund from the life subscriptions, which in time would provide an investment income which could be used for benevolent purposes. This income would be proportionate to the capital, which could only be built up if more members were obtained; and that depended upon the energy and good will of all the present members.

The guest of honour was one who had brought renown to his old College and to the profession. Professor Reynolds had served his College as a teacher. The President said that when he was a young student Reynolds typified to him all that he expected to see in a real veterinary surgeon.

They had not always agreed; if they had there would be use only for one of them and he was sure that would have been Reynolds; but he had always kept his pristine picture of Reynolds and admired his competence and envied his renown. In spite of his (the guest's) denial he was always Professor Reynolds to him.

When Mr. Reynolds rose to reply he was received with acclamation. He said that he appreciated greatly the honour that he had received in being made their chosen guest. He was the son of a veterinary surgeon, his brother was one, and indeed his family had been connected with the profession for several generations. When he was young it was the custom for a youth to be placed with a veterinary surgeon for some time before he entered College. As the pupil advanced in knowledge and experience he might be employed as an unqualified assistant. He had been pupil and assistant with the late George Harris at Sawbridgeworth. Harris had an extensive practice and was held in high regard by his clients and by veterinary surgeons. He did not let his assistants laze about in dogcarts! They had to do their journeys on horseback and they would be in the saddle from early morning till late at night and sometimes during the night. Mr. Reynolds described some of the journeys he had done; on many occasions he must have covered 50 to 60 miles per day. His next post was at Sudbury in Suffolk and he amazed some of his audience by telling them how, quite often, he had to castrate 15 to 20 colts at one visit and on the same site. He had volunteered for service with the Yeomanry in South Africa during the Boer War. Eventually the time came when he could enter the Royal Veterinary College. He was a little older than his contemporaries and as he had to finance himself he spent his week-ends doing work for veterinary surgeons. He qualified in 1912 and took a post at the College, ultimately being appointed Professor of Materia Medica and Pharmacy, being also in charge of the out-patients' clinic. After the First World War he returned to the College. He was happy in his post but when the opportunity arose to join Mr. Lirock at Newmarket with much better financial prospects the offer could not be denied. In due course he took the practice over completely. Even at Newmarket the conditions of practice had changed remarkably in his time. Quite a lot of conditions which previously were considered to be hopeless could be resolved now. He had seen remarkable changes in the veterinary field in his lifetime: we were liable to look at the past with nostalgia, but whilst paying due respect to the past one should keep one's eye on the future.

The President then called upon the President of the Students' Union to give an account of the activities of the students during the past year. Mr. Bleby was able to say that in their sporting and social activities the students had given a very good account of themselves. One social event was unique. People had been walking here, there and everywhere in search of records. They, the students, thought that it was time the R.V.C. featured in some outside activity. It was decided that "Winston Churchill's Tree," which had been planted recently at Cambridge, needed some good R.V.C. horse manure and what could be more appropriate than that the students should attend to its collection and delivery? An enterprising firm provided a splendid wheelbarrow and the run was organised with military efficiency. Leaving Camden Town at 6 a.m. the barrow of dung was guided to Cambridge by runners using a relay system. The dung was conveyed by road and delivered before 1 o'clock—54 miles! The run was filmed by the B.B.C. and he would like them to see his permanent pictorial record. They were a little disappointed that the undergraduates at Cambridge were so placid and exhibited little reaction even when they were dowsed with water by the Londoners. Turning to Mr. Reynolds he said that on behalf of the students it was his pleasant duty to present to the distinguished guest a colours tie. It was appropriate in colour and he hoped that Mr. Reynolds would wear it at Ascot. The guest of honour, obviously moved by this gesture, asked Mr. Bleby to convey his thanks to the students and promised to wear the tie on all suitable occasions.

The party then adjourned to the main hall to see the film of the "Dung Run" which was received with laughter and applause.

THE REGISTER OF VETERINARY SURGEONS

The following gentlemen were registered in the Commonwealth List of the Register of Veterinary Surgeons on the dates indicated:—

CROXFORD, Marshall Alan Porter, B.V.SC. (PRETORIA), c/o Overseas Visitors Club, 180, Earls Court Road, London, S.W.5, August 8th, 1960; KHENG, Chong Sue, B.V.SC. (QUEENSLAND), Veterinary Research Institute, 59, Tiger Lane, Ipoh, Federation of Malaya, July 12th, 1960; NAM, Cho Chak, B.V.SC. (SYDNEY), Government Veterinary Dept., S.I.T. Building, Block 11, 376, Upper Pickering Street, Singapore, 1, July 10th, 1960; and RAO, Pasupuleti Krishnaji, B.V.SC. (MADRAS), B.V.SC. (QUEENSLAND), City Veterinary Dept., Penang, Federation of Malaya, July 11th, 1960.

UNIVERSITY NEWS

Liverpool

Degree of B.V.Sc.

SECOND EXAMINATION, PART III

Akpokodje, J. U., Anwo, L. A., Baskerville, A., Batchelor, A. L., Bramley, P. S., Brinkler, J. L., Counter, D. E., Dennison, Margaret, Edington, N., Fabby, D. C., Flood, P. F., Furnevall, Elizabeth A., Hayes, M. J., Hayhurst, G., Howard, Nina S. K., Hughes, P. H., Ishmael, J., Jones, T. W., McNaughton, J. R., Markusfeld, O., Milroy, J. P., Molony, V., Na'isa, B. K., Nicholson, T. J., Pinckheard, Ann, Rutherford, D., Thompson, J. D., Townsend, C. J. A., Udall, N. D., and Wosu, L. O.

PERSONAL

Mr. G. N. Henderson has been appointed Veterinary Products Manager of CIBA Laboratories Ltd.

Mrs. J. C. Taylor of Beccles, Suffolk, wife of a veterinary surgeon, has recently become Mayor of the borough. Mrs. Taylor, who is also a Justice of the Peace, still finds time to help her husband in a busy mixed practice.

Births

MASON.—On July 30th, 1960, to Kathy, wife of Tony Mason, M.R.C.V.S., of St. Marys House, Broad Street, Wrington, Nr. Bristol, Somerset, a son, Duncan Thomas.

Marriage

DAVIES—DAVIES.—At Blaenwaun St. Dogmaels, on July 23rd, 1960, Lt. Thomas Hicks Roberts Davies of Boncath, Pembs., to Mona Richards Davies of Cardigan.

R.C.V.S. OBITUARY

We record with regret the deaths of the following members of the profession:—

BARTLETT, Edgar Brown, O.B.E. (Lt.-Col. R.A.V.C., retd.), of Torlands, Wheatridge Lane, Torquay. Graduated London, July 23rd, 1896. Died August 3rd, 1960, aged 86 years.

MORGAN, Edward, F.R.C.V.S., D.V.H. (formerly of Venezuela), 23, Crest Road, Hayes, Bromley, Kent. Graduated at the Veterinary School of the University of Liverpool on December 20th, 1909. Died July 23rd, 1960, aged 79 years.

PARSONS, Charles Frederick, 17, Pembroke Park, Dublin. Graduated at the Royal Veterinary College, London, on July 14th, 1898. Died July 17th, 1960, aged 86 years.

WOODHEAD, Thomas Weston, M.C. (Captain, late K.O.S.B.), of Horby, Demage Lane, Upton-by-Chester. Graduated Liverpool, July 12th, 1924. Died suddenly, August 5th, 1960.

COMING EVENTS

August

31st (Wed.). Annual General Meeting and Dinner of the Alumnus Association at the Royal (Dick) School of Veterinary Studies, Edinburgh, 7.30 p.m.

August 28th to September 3rd. 78th Annual Congress of the British Veterinary Association in Glasgow.

September

14th (Wed.). Yorkshire Division: one-day Poultry Course at the Yorkshire Institute of Agriculture, Askham Bryan, York, 10.30 a.m.

21st (Wed.). Joint Meeting of the North Wales Division with local Branches of the British Medical Association for a Symposium on Brucellosis at the Imperial Hotel, Llandudno, 2 p.m.

23rd (Fri.). First Meeting of the B.S.A.V.A. branch at the Golden Lion Hotel, Stirling, 6.30 p.m.

October

6th (Thurs.). Meeting of the Technical Development Committee of the B.V.A. at 7, Mansfield Street, Portland Place, London, W.1, 10.30 a.m.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Derbys. Quarndon Hall, Quarndon (Aug. 8).
Dumfries. Nethergarrel Farm, Lockerbie (Aug. 2).
Kincardineshire. Bent, Laurencekirk (Aug. 3).
Lanarks. Broughmore Farm, Balfron, Glasgow (Aug. 5).
Somerset. Ingsdon Farm, Bodden, Shepton Mallet (Aug. 2).

Fowl Pest

Dorset. Pradzona, Ivor Road, Corfe Mullen, Wimborne (Aug. 5).
Essex. Rose Cottage, Swallow Cross, Doddinghurst, Brentwood (Aug. 3); Chitral, Swallows Cross, Doddinghurst, Brentwood (Aug. 5).
Kent. Brindle Lane Farm, Stick Hill, Edenbridge (Aug. 2).
Norfolk. New Home Farm, Horsford, Norwich (Aug. 5).
Notts. 83, Nottingham Road, Keyworth (Aug. 2).
Suffolk. Crossways House, Poultry Farm, Great Barton, Bury St. Edmunds (Aug. 2); The Street, Culford, Bury St. Edmunds (Aug. 5); 17, Newmarket Road, Bury St. Edmunds (Aug. 7).

Swine Fever

Ches. Sealand Road Piggeries, Sealand (Aug. 2); Pinewood Nurseries, Allostock, Knutsford (Aug. 4); Green End Farm, Broughton (Aug. 5).
Devon. Hayne Barton, Cullompton (Aug. 8).
Essex. Peaslands Farm, Peaslands Road, Saffron Walden (Aug. 5).
Kent. St. Albans Downs, Nonington, Dover (Aug. 8).
Lancs Salesis Farm, Pimhole, Bury (Aug. 4); Crime Bridge Farm, Woodhouses, Failsworth (Aug. 5).
Lincs. Sewards Piggeries, Brickyard Gardens, Brant Road (Aug. 2).
Norfolk. Glebe Farm, Oby, Fleggburgh, Great Yarmouth (Aug. 2); Star Inn premises, Rockland St. Mary, Norwich (Aug. 4); Church Farm, Hemsby, Great Yarmouth (Aug. 8).
Staffs. Echills Farm, King's Bromley, Burton-on-Trent (Aug. 5).
Suffolk. Gardeners Cottage, Topcroft, Bungay (Aug. 8).
Sussex. Glayde Farm, Plummers Plain, Horsham (Aug. 5).
Wilts. Fairfield Farm, Bradford Leigh, Bradford-on-Avon (Aug. 2).
Worcs. Paddock, Gilberts End, Hanley Castle (Aug. 8).
Yorks. Clotherholme Piggeries, Ripon (Aug. 2); Moss Road Farm, Askern, Doncaster (Aug. 5); New House Farm, Sykes Lane, Oakworth, Keighley (Aug. 8).

Letters to the Editor

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Orthopaedic Surgery in Farm Animals

Sir,—I have read Mr. L. C. Vaughan's contribution (May 21st) and Mr. E. I. Williams's letter (June 25th) on patellar desmotomy in cattle, and I think that two points should be made.

First, every worker should remember that practitioners are not fond of writing, and the fact that a condition is not quoted in the literature does not necessarily mean that it is unusual. Such is the case in this instance. Desmotomy in cattle may not be quoted in English literature, but in 1905 Pinaroli and in 1906 Chapelier described Bassi's operation in cattle. Since then, the condition and the method of surgical treatment have been regarded as classical.

Secondly, my friend Mr. Williams, during his trip to the United States, saw a Friesian cow on which the operative procedure was performed in the standing position. This operation is usually carried out in the standing position (Pinaroli, 1905; Cadiot, 1923; Berthelon, 1939; Berge & Westhues, 1956).

However, practitioners in the field prefer the recumbent position for reasons of safety. Restraint of the standing cow is not always easy and the scalpel may cause a wound if the patient is restless.

Yours faithfully,
A. CONSTANTIN.

Champigné,
Meine et Loire,
France.
July 10th, 1960.

References

BERGE, E., & WESTHUES, M. (1956). "Tierarztliche Operationslehre." Paul Parey, Berlin.

BERTHELON, M. (1939). "La chirurgie du Bétail et des animaux domestiques." 1st edition. Vigot frères, Paris.

CADIOT, P. J., & ALMY, J. (1923). "Traité de Thérapeutique Chirurgicale des animaux domestiques." 3rd edition. Vigot frères, Paris.

CHAPELLIER (1906). *Vet. Rec.*

PINAROLI (1905). *Clinica Vet.*

Disease of Turkey Poults

Sir,—During the last 2 weeks I have had occasion to treat turkey poults which would appear to be affected with the same "disease" as described in the letter of Stevens, A.J., *et al.*, in last week's VETERINARY RECORD. There were about 100 birds, 8 weeks old, in excellent condition and thriving well on a high plane nutrition. They were closely confined under a dirty attempt at deep litter conditions. Deaths were sudden and usually the only premonitory symptoms observed were general lassitude and a tendency to scour. The most striking *post-mortem* lesions were generalised oedema with large quantities of fluid in the peritoneal cavity, and in most of the birds, around the coronary band of the heart. Extensive swelling of the kidneys, the surfaces of which were covered with petechial haemorrhages was very evident. Enteritis of various parts of the alimentary canal was also a prominent feature. Some birds showed a very pale musculature, and in one bird this paleness was confined to particular muscles, and reminded one strongly of the typical lesion associated with the muscular dystrophy of vitamin E deficiency in calves.

These birds were treated rather empirically with a depot injection of Terramycin in oil and the recently introduced diuretic Vetredex* at the rate of approximately 1 mg. per bird intramuscularly. The food was also changed to chick crumbs. The deaths ceased immediately, apart from a few birds already moribund, and after 3 or 4 days the entire flock looked much better. After a further 2 days deaths again commenced, and before the owner requested further assistance he lost 25 birds in 4 days. A second injection of Vetredex was again followed by cessation of deaths, and so far there has been no recurrence of the condition.

It is, of course, difficult to assess the value of treatment in one case such as this, but on clinical grounds alone the use of a powerful diuretic in a condition associated with such extreme oedema would appear to be strongly indicated.

Yours faithfully,
OLAF SWARBRICK.

Surrey House,
Arundel,
Sussex.
August 2nd, 1960.

* CIBA Ltd.

Sir,—The letter from the Cambridge workers (Stevens *et al.*, 1960) on this subject has drawn attention to a condition which is currently devastating turkey flocks in many parts of the country. This syndrome, and Newcastle disease in the early part of the year, have made 1960 one of the worst rearing seasons for many years according to several turkey farmers.

The syndrome has been seen by us occasionally since 1957 until this year when it reached epidemic proportions in the early spring, and although our observations are largely in agreement with those of Mr. Stevens and his colleagues, the following account of our experience of the condition may help practitioners and other diagnostic laboratories, since at the moment considerable confusion appears to exist.

In our experience the most striking feature of this condition is its complete inconsistency. No single common factor can be related to any series of outbreaks. All ages from 2 weeks upwards to 20 weeks have been seen to be affected, with a tendency for the heaviest losses to occur in the 1 to 2 month age range. On any one farm all ages present may become involved or only one age group. All systems of husbandry may be involved, *i.e.* tier brooders, floor brooders on wood shavings, slatted verandahs and

strawyards. A variety of breeds and strains and both sexes are affected.

Losses can be quite haphazard, one pen of birds being affected, while an adjacent pen containing similar birds is not. On the other hand, a whole turkey farm may be affected at one time. Mortality has been as high as 90 per cent. recently.

The variety of *post-mortem* findings described by Stevens and his colleagues is matched by the number of symptoms that may occur. Usually the condition appears quite suddenly and without premonitory signs, the best birds generally die first in excellent condition. The whole flock appears listless and there is a decline in food consumption. Birds which survive longer often show a slight yellow scour before death: they may breathe rapidly and emit a distressed cheeping sound intermittently. Death follows in a few hours, and the terminal stages are marked by fits which progress into a comotose state. Opisthotonus is frequently seen at this stage.

Often the nervous symptoms predominate in an outbreak and in a proportion of such cases a peculiar wry-necked condition is seen for about 24 hours before the poult dies, the kink in the neck being either backwards or laterally. Attempts to pull the neck straight show the muscles to be rigid. Some poults affected in this way have survived, but no resolution occurs over a period of 6 weeks, although the poult can eat and grow. Other symptoms seen, and believed by the writer to be associated with this syndrome include, keratoconjunctivitis, slipped achilles tendon and softening of the skeleton. Hocks and feet occasionally become swollen and lameness results.

Following a comparatively mild attack, the survivors frequently fail to thrive, and may continue to die sporadically over a period of several weeks. These poults often show very poor feathering, which may have white bands on the flight feathers in bronze breeds. In fact, they resemble the feathers of poults suffering from a lysine deficiency.

Post-mortem examination of such poults usually shows a pale, shrunken slightly cirrhotic liver, and sometimes clear serous fluid in the pericardium. The digestive tract is usually empty, and the intestines bile-stained. Although undersized for their age, the bodily condition of such poults remains good.

The *post-mortem* examination on poults dying in the acute stage of the syndrome may reveal some, or all of the changes listed by the Cambridge workers, *i.e.* kidney congestion, liver haemorrhage and necrosis, degrees of enteritis, flecks of pus in the air sacs and pancreatic haemorrhages, although we have not observed the generalised oedema that they refer to. On the other hand, the writer considers enlargement and intense patchy congestion of the spleen to be a frequent and important lesion. Degrees of infection by *E. meleagrimitis* have been occasionally seen in association with the enteritis, especially in younger poults.

The association between outbreaks of this condition and the use of certain proprietary turkey foods was inescapable earlier in the year. A farmer using 2 brands of food for rearing poults could lose birds very heavily on one food, and not at all on the other, despite the fact that the poults were of the same age, breed, and source, and separated only by wire. Withdrawal of suspected food, frequently but not invariably, dramatically brought losses to a halt, a return to the original food has on occasions been followed by further deaths. At present the position is less clear-cut as foods supplied by several different compounders appear to be involved.

Treatment of outbreaks by dietary terramycin or aureomycin does not seem to influence the course of the condition, nor does furazolidone in the food for 7 days at 0.04 per cent., or sulphaquinoxaline in the drinking water for 5 days at 0.04 per cent.

The only advice that can be offered to a farmer is to put his birds on to a very simple ration for about 10 days. If a small group of birds is involved it may also help if they can be removed to fresh accommodation.

If one does not accept this wide range of symptoms and lesions as being common to a single condition, then at least 3 different turkey conditions of unknown aetiology have suddenly appeared on a large scale, *i.e.* one affecting the central nervous system, one involving the liver and kidneys and one characterised by enteritis. The writer is firmly of the opinion, however, that these various manifestations are all attributable to a single entity, and further, that this condition has many pathological similarities to the haemorrhagic syndrome of the fowl, and little resemblance to the conditions described by Snoeyenbos *et al.* (1959), and Mongeau *et al.* (1959). Investigations have been in progress for some time at this Station on the haemorrhagic syndrome of the fowl, and it is hoped that the data thus accumulated may provide a basis for an explanation of this problem in turkeys.

Yours faithfully,
C. C. WANNOP.

Houghton Poultry Research Station,
Houghton,
Huntingdon.
August 5th, 1960.

References

MONGEAU, J. S., TRUSCOTT, R. B., FERGUSON, A. E., & CONNELL, M. C. (1959). *Av. Dis.* **111.** 388.
SNOEYENBOS, G. H., BASCH, H. I., & SEVOIAN, M. (1959). *Ibid.* **111.** 377.
STEVENS, A. J., SAUNDERS, C. N., SPENCE, J. B., & NEWNHAM, A. G. (1960). *Vet. Rec.* **72.** 627.

Trichomonas Disease

Sir,—May I, through the courtesy of your columns, record the reappearance in the North Staffordshire area, after a lapse of some 10 years, of trichomonas disease in dairy cows?

The condition was met with in a herd re-established as Attested in February this year under Mod. art. 6, with adult cattle bought from markets in all parts of the country. Unfortunately, it has not been possible to establish the source of infection: although the stock bull was retained there was no previous history of infertility in the dispersed herd.

In the herd of some 65 heifers—purchased newly-calved or springing between February and April this year—none are in calf and all except 6 which

have not been to the bull are infected. Through a stolen service a second, neighbouring herd has become infected also.

To those practitioners who dealt with the heavy outbreaks of the disease during the forties, the serious economic loss which follows the condition will need no emphasis. I feel that the disease may well be more widespread than is realised. One feels that the time may be ripe for urgent legislation for compulsory slaughter of, and compensation for, bulls in infected herds, and a limitation of service to artificial insemination in such herds.

I am grateful to Mr. T. F. Vallely, M.R.C.V.S., of the V.I. Centre, Wolverhampton, for his help in confirming this outbreak.

Yours faithfully,
R. B. WOOD.

92, Bucknall New Road,
Hanley,
Stoke-on-Trent.
August 4th, 1960.

Obstetrics

Sir,—Mr. Straiton is fortunate indeed if he has found that most cases of incomplete opening of the cervix at lambing, dilate in time of their own accord.

Since 1952, in this practice we have tried hard to reduce the number of our caesarean sections, but have been forced to an average of about 50. The figure should have been greater but for the fact that we used to leave a proportion in the hope that the cervix would open.

About 20 per cent. of those cases did open, though many were too weak to lamb without a little help. The remaining 80 per cent. then had to be operated on, if there were no signs of toxaemia, or no evidence of emphysema (interference with such cases is almost always quickly fatal). Toxaemia always developed within 24 hours in a "neglected" case, and death in 48.

In an attempt to produce dilatation, hormonal treatments of various types were tried on some of the ewes. In many, this seemed to bring about death more quickly. Calcium borogluconate may have been of some use: it at least helped the ewe to overcome the products of delay.

We handled the sheep as little as possible, and tried to keep them in their usual surroundings.

Now all suitable ewes are operated on within a few hours of being brought to our notice (and this has always included the odd case of delay by the farmer), and our ewe recovery and survival rate is 95 per cent. with a high live lamb survival, and ewes capable of breeding again.

It seems obvious that *this* is the method to be considered at the outset. No other gives such consistently good results; and to neglect caesarean section, or to be too selective or dilatory, is wasteful and wrong.

Yours faithfully,
W. CAUFIELD.

26 Regent Place,
Rugby.
August 1st, 1960.

Veterinary Education—an Anomaly

Sir,—A note in THE VETERINARY RECORD (*Vet. Rec.* **72**. 434) states that "Since the Spens Report, medical appointments in the universities have been on a higher level than others. . . . These scales are laid down by the University Grants Committee and, therefore, correspondents are mistaken in supposing that it would be possible for organisations like the B.V.A. or the R.C.V.S. to have them altered."

I wish to dissent entirely from acceptance of this point of view. No doubt medical men are paid more in Universities because of their special ability in teaching medical students and the need for higher rewards to attract them for this purpose.

One can hardly think of anything more derogatory to our profession, however, than acceptance of the principle that medical men should be paid more than veterinarians for teaching veterinary students. This implies in the most direct manner a higher grade of competence, by medical men, in the veterinary field than that attained by our own graduates.

Percival (about 1840) protested most effectively against this concept at the Royal Veterinary College, and I thought it no longer existed. Now that it has been resurrected I hope that the B.V.A. and the Royal College of Veterinary Surgeons *will* take all possible measures to have this anomaly recognised and corrected.

Yours faithfully,
JOHN FRANCIS,
Professor of Preventive Medicine, and Dean, Faculty of Veterinary Science.
University of Queensland,
Yeerongpilly,
Brisbane,
Australia.
July 20th, 1960.

Our correspondent's strictures are misplaced. The B.V.A. does not "accept" and has never accepted the principle referred to. It is one which this Association has fought for many years as the records amply testify. The fact remains, however, that despite all our efforts the University Grants Committee is not influenced by outside bodies and the anomaly remains.—*Editor.*

Halothane Anaesthesia in Small-animal Practice

Sir,—May I be allowed to congratulate Mr. F. W. Sims on the excellence of his article "Halothane Anaesthesia in Small-animal Practice," published in your issue of July 30th, 1960?

I should like to support all he has to say about the virtues of Halothane. Anaesthesia in the wild animal is sometimes fraught with difficulty. The initial approach to the patient usually demands some form of physical restraint, and may be assisted by the use of an ataractic drug. Subsequent gaseous anaesthesia is highly desirable since, in the post-anaesthetic period, rapid return to an accurate quadrupedal balance is very necessary in an animal so dependent for its confidence upon responsive flight reflexes.

Halothane has been found to be extremely valuable in these contexts. The ease with which the anaesthetist can control the depth of anaesthesia

gives confidence to a surgeon who is operating upon an aggressive and potentially highly dangerous animal. Post-operative success is largely dependent upon the speed with which the wild animal recovers, and Halothane has been found to be the best of all gaseous anaesthetics in this respect.

The expense of the drug militates against its use in a "gas box" type of initial induction which is so useful in avoiding handling a savage animal. Other gases can, of course, be used for this purpose, but their effect is so transient that the time taken to transfer a savage animal from such a gas box to an operating table for further anaesthesia can be long enough to cause considerable alarm. Under these circumstances, it is usual to give an intravenous short-acting anaesthetic to assist in gaining a depth of anaesthesia which facilitates subsequent intubation; Halothane anaesthesia provides greater safety for all concerned.

A cheetah was recently anaesthetised for an orthopaedic operation, and anaesthesia lasted for rather more than 2 hours. A Waters to-and-fro re-breathing system was used, and Mr. Sims may be interested to know that a total of 11 c.c. of Halothane was used.

Finally, the writer would like to report that "face-mask" anaesthesia of small birds—notably the budgerigar—using oxygen at 100 c.c. per minute flow over Fluothane varying from mark 4 to mark 8 on the scale, is a satisfactory adjunct to deep narcosis produced with intramuscular pentobarbitone. It is considered that Fluothane alone *via* a face mask may alarm the bird initially due to the restraint necessary.

Yours faithfully,
OLIVER GRAHAM-JONES,
Veterinary Officer.

The Zoological Society of London,
Regent's Park,
London, N.W.1.
August 3rd, 1960.

ADVERTISERS' ANNOUNCEMENTS

THE DISTILLERS COMPANY (BIOCHEMICALS) LIMITED announces the introduction of a 75-ml. vial of "Distavone" Suspension Veterinary. Each vial contains 75 ml. of an aqueous suspension of procaine penicillin (300,000 I.U. per ml.) and dihydrostreptomycin (0.25 g. per ml.).

GLAXO LABORATORIES LIMITED announce the introduction of a 4-in-1 sheep vaccine, giving simultaneous protection against pulpy kidney disease, braxy, blackleg and tetanus. This new product, known as Ovilin, has been developed by Glaxo Laboratories and will be available to veterinary surgeons this week.

SMITH & NEPHEW PHARMACEUTICALS LIMITED announce the availability of Welldorm Veterinary tablets. Supplied in two strengths, 5 grains and 2½ grains, Welldorm Veterinary is indicated for the general sedation of small animals and those suffering from post-operative restlessness and mild skin irritations. It is also extremely valuable in preventing travel sickness in cats and dogs.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
16th to 30th June, 1960		8	—	—	22	—	60
Corresponding period in	1959	5	—	—	18	—	48
	1958	4	—	—	8	—	103
	1957	5	1	—	36	—	47
1st January to 30th June, 1960		128	—	14	1,321	—	599
Corresponding period in	1959	127	—	9	417	—	601
	1958	91	3	111	309	—	691
	1957	227	5	24	455	—	455

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th July, 1960		5	—	—	16	—	54
Corresponding period in	1959	5	—	—	7	—	37
	1958	5	—	—	13	—	75
	1957	9	—	4	40	—	75
1st January to 15th July, 1960		133	—	14	1,337	—	653
Corresponding period in	1959	132	—	9	424	—	638
	1958	96	3	111	322	—	766
	1957	236	5	28	495	—	530

TUBERCULOSIS (ATTESTED HERDS) SCHEMES

The number of Attested Herds, i.e., herds officially certified as free from Tuberculosis as at 30th June, 1960, was as follows:

ENGLAND	WALES	SCOTLAND	TOTAL (GREAT BRITAIN)
161,833	37,956	43,766	243,555

TUBERCULOSIS ORDER OF 1938

The number of bovine animals slaughtered under the Tuberculosis Order of 1938 during the period 1st April to 30th June 1960, was 6.